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In September 1929 Robert R. Logan, the Philadelphia editor of the American Antivivisection Society's periodical the *Starry Cross*, penned a column to his readers. Like many editorials the antivivisection activist had written since World War I, this one attacked vaccination, the number one enemy of antivivisectionists who subscribed to the *Starry Cross*. Vaccination was excoriated in every issue as poisonous, polluting (especially to children), and abusive to the animals whose bodies were used to produce the antitoxic serums for vaccines. The main mission of the AAVS and other allied societies throughout the United States and Britain, where the movement originated in the 1860s, was to end the practice of performing experiments on live animals for medical research, and the *Starry Cross* filled its pages with scathing invective against the quickening medical profession and its growing dependence on vaccines. The *Starry Cross* consistently argued that vaccination was merely a commercial ploy to line the pockets of greedy medical opportunists at the expense of vulnerable animals' and children's lives. The journal maintained this position unwaveringly into the 1920s, though by 1929, the argument against vaccination was losing ground to the visible gains in public health and attendant public trust in medical science.[1]

Logan's entry, appearing in the October 1929 issue, differed from the usual *Starry Cross* missives, however. "It must be recognized," he wrote, "that each epoch has its peculiar expression, and that this is an age when every movement must take on something of the spirit of organization and the method of advertising which is characteristic of the day," indicating his realization that in order to remain relevant, antivivisectionists needed to consider certain compromises regarding technology and modernization. Having spent years decrying the existence of advertising and its modern vehicles, the radio and the cinema, this must have been difficult for Logan to admit. Yet he did not compromise the moral philosophy undergirding the religious and ethical argument against

vaccination. Logan was careful to distinguish exactly how "with it" the AAVS and its followers should be, drawing clear moral boundaries. He continued,

> With medical advertising on every page and billboard it is inevitable that we should seek to catch the eye, and if the doctor must use the radio to fill the mother's heart with fear it is but natural that we should "get upon the air" to give her courage. The jazz band of vivisection with its saxophones and serums, vaccines and glandular operations, is making the public ear insensitive to nature's harmonies, so we must blow a little harder on our pipes of truth.[2]

Logan's link between vivisectional medicine and a jazz band, analogizing poison penetrating the skin to poison wafting into the body through the airwaves, and accusing both of disrupting "nature's harmonies," harbors a troubled negotiation between animals, scientific change, medical technologies, and a modernizing Philadelphia. Describing antivivisectional research and its invasive products as a "jazz band" furthermore exposes latent racial anxieties underlying the AAVS's firm stance against vaccination.

The vivisection–vaccination controversy in the pages of the *Starry Cross* crystallizes two specific conflicts that the Philadelphia antivivisectionists struggled to reconcile in the 1920s. The first is a discrepancy between human and animal compatibility: the AAVS expressed a desire for a universal spiritual compatibility between humans and animals in terms of their vulnerability to suffering and need for compassionate protection from the threat of scientific research, but expressed equally strong sentiments against equating the compatibility of spirit and the body. Vaccination highlighted this conflict between valuing humans and animals as spiritually, but not corporally, compatible. The AAVS, arguing that serums derived from animal bodies were an unnatural "admixture of contaminators of human blood,"[3] had to contend with both spiritual poison (resulting metonymically from the sinful torture of animals involved in making the serum) *and* physical poisons (resulting in an actual mixture of human and animal bodies). This anxiety was heightened by the penetration that vaccination brings with it: the needle's penetration of the skin and the resulting penetration of nonhuman fluid into the human body were potent threats to sexual, spiritual, and bodily purity. The AAVS found an effective analogy to this threat of pollution in musical language, using "harmony" as a measure of safety and vigilance and "jazz" to describe harm. Trying to square this conflict came down to a question of human value, revealing a complex speciesism underlying the logic of the AAVS's arguments against vaccination.

The second paradox circles around racial anxieties that stem from the penetrative aspects of vaccination. Throughout its publication history, the *Starry Cross* espouses a progressive social stance toward race, colonialism, and

immigration consistent with its pacifist Christian ideology. Yet as the 1920s progressed, the *Starry Cross* increasingly turned to jazz as a metonym of the chaotic, unpredictable atmosphere contributing to medical tyranny over the body; Logan's "jazz band" is but one of many times jazz appears in the context of vaccination. Deploying the specter of jazz entangles animal activism with racial animalization, and suggests that the vaccination's injection of animal serums into the human body is a form of miscegenation.

Philadelphia's antivivisectionists were not the only activists opposing vaccination. The city was also home to the Anti-Vaccination League of America (AVLA), founded in 1908 after Philadelphia ramped up its attempts to require child vaccination against smallpox during an outbreak in 1906.[4] While the AAVS and the AVLA differed in their activist approaches to antivaccination, both took issue with the political power the state was gaining over one's body. Pennsylvania, New York, and Massachusetts already had compulsory vaccination laws on the books by 1908, which the AVLA targeted as forms of "medical tyranny."[5] Well-organized efforts to overturn these laws, and others across the Eastern Seaboard, failed during the 1910s. In 1921 the Sheppard-Towner Act established federal funds to match state efforts to set up clinics providing care, including vaccinations, for mothers and children, codifying for the first time widespread governmental involvement in personal health care.[6]

The AAVS was not unilaterally antimodern, antitechnological, or even antiscience, despite its central goal of eliminating the practice of experimental research. The contributors to and readers of the *Starry Cross* were primarily educated, middle- and upper-middle-class white citizens, both women and men. With 1,500 subscribers listed in 1926, they were a small group among many social reform workers.[7] The publication broadly reflects a Christian uplift sensibility resonant with Progressive reformers like the Woman's Christian Temperance Union, combined with a kind of libertarian antistatism and suspicion of compulsory legislation the AAVS shared with other antivaccination advocates. It can be difficult to put a finger on how the AAVS organized its position in society, as the lists of things that it espoused and opposed that percolate up from the journal's pages are at times contradictory. During the 1920s, it consistently favors Abraham Lincoln, nature, George Bernard Shaw, Mark Twain, Christian Science, the practice of public sanitation and antisepsis, vegetarianism, Gandhi, mental suggestion, internationalism, immigration, and the concept of evolution, if not certain secular interpretations of brutal survivalism. On the other hand, it consistently vilifies cancer, pollution, commercialism, socialism, fascism, materialism, slavery, racial discrimination, colonialism, aggression and domestic violence, war, entertainment (especially

animal entertainment, but also dancing and the cinema), and the Red Cross. The one quality underlying all its preferences is a deep commitment to the value and preservation of life and a belief that all life could be improved through a scientific practice that shared, not condemned, such an ethic.

What I did not expect to find within that ethic was jazz, much less a pattern of linking jazz to vivisection when arguing against vaccination. Yet the surprising frequency of this link in the pages of the *Starry Cross* during the 1920s exposes some unexpected fissures in the antivivisectionists' seemingly clear valuations of human and animal life. While its readership and following were small, the AAVS was nevertheless visible enough to draw both congratulatory and invective correspondence from prominent medical practitioners, Hollywood executives, and legislators.[8] Despite the sharp focus of the periodical's activism and its somewhat marginal position within the Philadelphia social reform scene, its strange combination of vaccination, jazz, and vivisection bears close study, as its motivations to protect animals are deeply bound to broader cultural anxieties about the threat to purity posed by science, race, and sex. For Logan and the middle-class white readers of the *Starry Cross*, the stakes of succumbing to the jazzy cacophony of vaccination amounted to no less than medical miscegenation. By turning to racialized, speciesist arguments in asking for mercy toward animals against the "insensitivities" of scientifically minded torture, the antivivisectionists' use of the sound and image of the tortured animal was meant to protect the human body and keep it white.

In following this line of investigation, I connect the growing literatures within American studies on science and technology, on the one hand, and animals, on the other. In doing so, I expand on the groundbreaking cultural work on the relationships of animals to scientific research—such as Coral Lansbury's *Old Brown Dog*, Donna Haraway's oeuvre (especially her discourses on animal experimentation in *Primate Visions* and *When Species Meet*) and the anthropologists Sarah Franklin and Margaret Lock's stellar *Remaking Life and Death*—to trouble the strategies that activists have used in promoting animal protection. Being on the side of animals often requires difficult compromises, something that Steve Baker has termed in other contexts "a spurious notion of fondness."[9] The present special issue offers an opportunity to delve deeply into the current and historical ramifications of this contradiction that speak to broader American studies concerns. The AAVS's spurious fondness airs out the underside of an argument that was, on its surface, a genuinely heartfelt effort to promote benevolence, and informs current scholarship and activism regarding animals, science, and American culture.

Vis Medicatrix Naturae: The Problem of Human Value

The Philadelphia AAVS was not exaggerating the number of animals mutilated for vaccine production. From the earliest days of immunological research, animals were central to studying immunity and producing vaccines. The Latin word for cow, *vacca*, is built into the word *vaccine*—coined by the English physician Edward Jenner during his experiments relating the bovine disease cowpox to the more deadly human smallpox in the 1780s and 1790s.[10] A century later, the German physician Robert Koch laid the foundation for the germ theory of disease and bacteriology with the use of an ox's eye, with which he could make a culture medium to isolate and grow microbes.[11] Shortly after, the French scientist Louis Pasteur used Koch's concept of the culture medium to refine the process of vaccine production. To safely confer immunity without spreading the disease, Pasteur found that he could control the mutation of the microbe—essentially controlling its virulence—by passing it through a number of living bodies until it stabilized in a safe form, usually requiring six to eight sets of animals for each experiment. He did this by using hundreds of dogs, and later guinea pigs and rabbits, as his culture media. This model of vaccine production became standardized and grew in scale as the demand for vaccines expanded over the first half of the twentieth century.[12]

In the United States, John D. Rockefeller founded the Rockefeller Institute in New York in 1901 to carry out bacteriological and microbiological research. The institute and its primary researchers of the 1910s and 1920s, Simon Flexner and Hideyo Noguchi, were frequent targets of attack in the *Starry Cross* for their use of thousands of animals. The AAVS had legitimate concerns. Of the many Pasteur-type experiments the institute carried out on animals to find vaccines for deadly bacterial diseases such as tetanus, cholera, and diphtheria, only the last was widely successful by the 1920s, a success that necessitated an even greater volume of animal fluids. To produce the antitoxin at enough volume to satisfy growing demands, researchers turned to larger animals. Horses were infected with diphtheria bacilli to produce antibodies, which were then harvested by drawing significant amounts of blood.[13]

The antibody-containing serum was then separated from the drawn blood and used to make antitoxin. Antitoxin vaccines had (and continue to have) the disadvantage of only conferring immunity for a limited time. For the AAVS, these circumstances rightly painted a picture of limitless animal suffering with only dubious, spotty, and often legitimately dangerous results to human and animal life.

Figure 1.
The Starry Cross ran this advertisement during the late 1910s and early 1920s, connecting the vivisection of horses to the contamination of children. Courtesy of University of Texas Libraries.

Proponents of vaccination and bacteriological research vociferously argued that these risks were outweighed by the benefit of vaccines to public health. William Williams Keen, a prominent Philadelphia-born brain surgeon, wrote prolifically in defense of the experimental method, vivisection, and new medical technologies, including vaccination, for professional and lay audiences. Keen's writings reached a large audience: he was president of the Philadelphia School of Anatomy from 1875 to 1889 and built his reputation over the turn of the century as a brain surgeon, becoming president of the American Surgical Association and American Medical Association in 1898 and 1900, respectively. His public presence attracted the attention of the AAVS early on, and by the late 1910s Keen and the *Starry Cross* had entered into a long epistolary debate that would last well into the 1920s, when Keen was in his nineties. Having served as a military surgeon in both the Civil War and World War I, Keen experienced firsthand the transformation of medicine as it adjusted to Koch's and Pasteur's germ theories in the 1880s and 1890s. The most practical change grew from the work of Joseph Lister, who, influenced by Pasteur's early work, proved that cleaning hands, instruments, and surgical environments greatly reduced the risk of infection in surgical patients. This antiseptic method became de rigueur for modern medical practitioners by the late nineteenth century and inaugurated the

Figure 2.
Professor William W. Keen's clinic, Jefferson Medical College Hospital, December 10, 1902 (surgeons around a person on operating table with spectators [medical students?] in the background). Courtesy of Library of Congress.

modernization of scientific experimentation. The *Starry Cross* actually supported Lister's antisepsis techniques—a small point on which they found common ground with Keen—but did not agree that the acknowledged existence and control of microbial contaminants should justify the rapidly expanding field of vivisectional research.[14] Keen had been an established surgeon in his forties when Lister's discoveries revolutionized surgery, and Keen drew on his own experiences to argue for the continued benefit that such research could provide.[15] "Only those who have lived through the transition period," he wrote, "can fully appreciate the joy of deliverance from Death."[16]

Keen's education and practice in Philadelphia reflected the city's unusually rich medical and scientific roots. Enlightenment ideas guided the founding of the United States and its Constitution; Benjamin Rush taught medical courses at the University of Pennsylvania (né the College of Philadelphia) in

1769 before signing the Declaration of Independence.[17] Thomas Jefferson's American Philosophical Society was another early entry into Philadelphia's scientific milieu.[18] Samuel Morton, infamous collector of skulls and author of *Crania Americana*, graduated with a medical degree from the University of Pennsylvania in 1820 before turning to natural science, devoting much of his energies to Philadelphia's flourishing Academy of Natural Sciences in the mid-1820s,[19] which joined other scientific, cultural, and medical institutions forming the heart of nineteenth-century US knowledge production, in which the proper conduct and purpose of scientific research was established as a highly contested public discourse.

Especially important to later antivivisectionist arguments were ongoing debates in Europe and America over Romantic science, French positivism, and eventually German materialism. These debates took place squarely within the Philadelphia medical fold in the late nineteenth century, as the ever-active medical community strove to modernize via the latest philosophical and technical advances from Europe, but did so in conflict with lingering Romantic and idealist philosophies.[20] German materialism found its way to Philadelphia after the Civil War, as physicians such as Keen were swayed by Hermann von Helmholtz's sensory-perception methods of studying physiology and anatomy in complement to Pasteur's experimental methods.[21] Materialist science held that truth could be obtained only through the senses, not through the mind or spirit, which necessitated experimentation, not contemplation, to achieve knowledge.

Late in Keen's career, he wrote public defenses of vivisection in the name of materialist science for several publications (most notably the *Ladies' Home Journal*,[22] which incidentally was founded in Philadelphia within twenty days of the AAVS and the *Starry Cross*). His books on technical and philosophical subjects, including *Animal Experimentation and Medical Progress* (1914), *Medical Research and Human Welfare* (1917), and *I Believe in God and Evolution* (1922), reflect his direct and extended confrontation with antivivisectionists during the last thirty years of his life.

Keen appears almost monthly in the *Starry Cross*, which maintained the practice of publishing both sides of the exchanges between Keen and AAVS members. The tenor of the correspondence is caustic. Both view the other as a danger to public health and as immoral crusaders for modern corruption, especially regarding each party's position on vaccination. *Starry Cross* associate editor Mary Lovell asserted, "It is not difficult to account for diseases like gangrene, tuberculosis, and cancer, considering the persistent introduction into the human system for so many years of foul products of disease, vaccines

and serums," citing a Dr. Robert Bell of London to support the connection between vaccination and increased levels of disease.[23] A few pages on, Lovell recounted a dispute in Los Angeles, California, over a proposed bill to make vaccination compulsory in schools. After arguing that the imposition of compulsory vaccination was primarily motivated by the potential for commercial gain,[24] she reported what she saw as the most dangerous risk: one child "was refused admission to school without vaccination. Her parents finally, but with much reluctance, consented. Within a week the girl was dead . . . there was no question but that the vaccination was the cause of death."[25]

This editorial occasioned several letters between Keen and Lovell, published in the October issue of 1926. Keen wrote, "My dear Mrs. Lovell: I have read your editorial in the July *Starry Cross* with amazement. Dr. Robert Bell . . . evidently ought to be in a psycopathic [sic] hospital if he really asserts that the increase in cancer is due to vaccination."[26] Lovell's response to Keen clarifies the position of the AAVS and reveals the impasse between antivivisectionists and modern medical scientists:

> We look on the question of vivisection from totally different points of view. I look at it solely from the moral and spiritual side. While I think that the claims of prevention and cure through the use of vaccines and serums and methods resulting from vivisection are weakened by the known fact of evil results . . . my never to be abated hostility to it is because I believe it to be fundamentally and radically wrong. If all the benefit said to be derived from it could be proved permanent. . . . I should still believe that some better way could be found, and seek it earnestly and prayerfully.[27]

What to the AAVS was consistently "fundamentally and radically wrong" was, to Keen, "conspicuously humane" and absolutely necessary to "magnificent, life-saving, health giving discoveries."[28]

The crux here, on one level, is axiomatic: Keen is unabashedly speciesist and holds that the medical ethics of materialist science requires that one must hold humans above animals. In contrast, the AAVS maintains that holding humans above animals for any reason, and causing animal suffering to do so, is the fundamental moral wrong, appealing to the Romantic universality of animal and human spirituality. However, for Keen's argument to cohere, one has to believe that what can be learned from experimentation on animal bodies can be transferred to human bodies, an equivalence with which the AAVS is uncomfortable. It is telling that, in their decades-long back-and-forth about vaccination, the terms of the arguments between Keen and the AAVS never change, and they accuse each other of committing the same crimes: of perpetrating medical violence against people; of hindering the moral and scientific progress

of American and world civilization; and of being dishonest and malevolent in their representation of information. These circular arguments reveal the strange underlying sameness of Keen's and the AAVS's message. While vaccination's extreme consumption of animal bodies makes it seem like a perfect target for antivivisectionists' arguments for a universal mercy for human and animal, their argument rests on the assumption that physically mixing human and animal bodies is a violation of nature. Keen openly values humans over animals in the name of public health; the AAVS values humans over animals in the name of propriety. By viewing the injection of animal antibodies into humans as a sinful corruption, the AAVS's logic is fundamentally no less speciesist than Keen's defense of the practice.

Animus ex Machina: Confronting "The Offspring of Our Animal Inheritance"

Robert Logan's attachment of the term *jazz* to vaccination ties this speciesism directly to a concern with preserving whiteness. The musical analogy is apt in the context of Philadelphia's varied activist culture responding to racial migration and ethnic immigration from southern and eastern Europe. "Jazz" ties the scientific ethics of antivivisection to cultural definitions of human value. In particular, it calls to mind the prominent Philadelphia reformers supporting the Philadelphia Settlement Music School, namely, Mary Louise Curtis Bok (daughter of Cyrus Curtis, the founder of the *Ladies' Home Journal*, and wife to its editor in chief, Edward Bok). Starting in 1908 in Philadelphia, Settlement Music Schools grew out of immigrant settlement houses across the mid-Atlantic, designed to direct the nonworking activities of immigrant laborers and to standardize, and Americanize, the kinds of music and instruments that immigrants played.

Settlement Music Schools touted their music education as strictly recreational and discouraged participants from pursuing professional musical careers: one Cleveland school advertisement urged that student "Joe" ought to "follow his music study as an avocation if not as a profession, for he will have much leisure time in the future. His leisure time should be a source of stability and joy rather than restlessness and boredom."[29] The expectation of nonprofessionalism subtly underscores the reformers' position that playing "ethnic" music, and especially pursuing an itinerant musical or vaudeville career, was not a proper way for immigrants to spend their laboring hours. Many of Philadelphia's Settlement music classes were taught by members of the Philadelphia Orchestra, establishing the standard of European classical music as the desired musical

style.[30] And while nonprofessional musicianship was favored, the creation of the Curtis Institute of Music in 1924 also underscores the belief that, if one is talented enough with classical instruments, then the proper professional course is to study for a position in a stable, classical orchestra. Classical music signified assimilation and whiteness; it was one of many ways that urban reformers sought to work against cultural contamination. And while Logan and the AAVS may not have agreed with the "medical tyranny" of compulsorily vaccinating newly arrived members of their city, the antivivisectionists' clear distaste for jazz clearly aligns with fears of cultural infection and impositions on bodily and cultural purity. The antivivisectionists would tie a judgment about musical expression to the sound and image of the tortured animal as an indicator not simply of one's taste but of one's human value.

The connection between jazz and antivivisection activism combines the AAVS's concerns with universal mercy, individual liberty, and the threat of commercialism in both the scientific and the cultural realms. Ronald Schleifer writes convincingly of "the transformations in understanding, experience, and history that were conditioned by the repertoires of cultural phenomena" in "both the sciences and the popular arts" of the early twentieth century, theorizing the coconstitution of scientific modernity and the emergence of popular entertainments.[31] "Modernism," he writes, "brought with it "the need felt by many working in the arts and sciences to rethink and redefine received conceptions about human life, social value, and scientific knowledge." Combined with "huge influxes" of eastern and southern European immigrants and the migration of African Americans from the south to various urbanizing, industrializing centers in the north and Midwest, the commercialism of entertainment was a major challenge to normative "received" understandings of music, for one, and also labor, health, and social values.[32] Certainly this link is borne out by the AAVS's twin critique of materialist science and commercial popular music in likening vivisectional medicine and vaccines to jazz. While I must speculate about exactly what antivivisectionists were hearing when they called it "jazz," scholars of the jazz age agree that during the early 1920s, the term referred broadly to all popular and nonclassical music, including Tin Pan Alley tunes composed and performed by white musicians and George Gershwin's jazz–classical hybrids,[33] and that the term carries racial as well as ethnic undertones. Black jazz as an urban "vernacular" phenomenon was marginal to the more "prosaic" mainstream, and at the start of the decade was produced and consumed primarily by African Americans.[34] However, as the decade progressed, despite "the popular belief that jazz was a primitive 'jungle' music, black jazzmen were in the process of developing a professional band

style" from "an amalgam of black music and white orchestral traditions."[35] The readers of the *Starry Cross* most likely never heard black jazz, but nevertheless they saw in these amalgamated forms of jazz an appeal to "baser" desires. Moreover, urban living conditions in Philadelphia and elsewhere put eastern and southern European immigrants in close contact with African Americans. While the AAVS's social agenda supported both groups' access to uplift, its use of jazz to denote spiritual and bodily "disharmony" points to a greater concern with losing potentially "white" Europeans to the temptations of Negro music—a fear that the Settlement Schools actively worked to mitigate. The AAVS was certainly not the only white audience ambivalent to jazz; the music was widely considered a "racial and ethnic attack on middle-class, Protestant values of self-discipline, sexual propriety, and self-advancement."[36] However, by disparaging jazz in the service of promoting animal protection, the AAVS created a perilous contradiction between a tempered racial progressivism and animalism, enmeshing antivivisection and antimiscegenation at the center of its arguments against the penetrative and polluting technology of vaccination.

The AAVS's vision of modern progress is one that combines kindness and the sharing of a universal, nondiscriminatory spirit—extending as much to oppressed peoples as oppressed animals—with the primacy of individual freedom from the "slavery" of state compulsion and commercialism.[37] In a 1924 issue of the *Starry Cross*, Logan uses the language of evolution to argue that modernity is not properly progressing toward those goals, but is instead hindering the development of the human spirit, encumbering the human mind in favor of a materialist—and animalistic—focus on the body:

> [The "human kingdom" is a]dvancing with appalling slowness, to be sure, in the midst of wars and brutalities, international hatreds, economic slavery, murders and judicial murders, the tortures of the trap and the slaughterhouse and the deviltries of the laboratory. Yet these abominations are nothing new; they are the offspring of our animal inheritance of passions mis-driven by the half-developed, unregulated mind, whereas anti-vivisection and humane education and child protection societies and peace awards are new and shine as beacon lights to point the path of progress.[38]

This understanding of evolution clearly asserts a natural hierarchy of humans and animals progressing toward more self-regulation and control, which is being disturbed by an unnatural return to animal "passions." Lovell further describes this disjuncture as a disruption of correct development, using the language of music to emphasize the scale and tenor of its backwardness. She writes, "Vivisection and its resulting tyranny over the human body are anachronisms, out of harmony with the progressive spirit of the age which objects to tyranny

of any kind."[39] This "confusion," "disorganization," and "disharmony" found purchase in the antivivisectionists' increasing use of the term *jazz* to describe vivisectional practices. As early as 1922, references to the "jazz age" popped up in the *Starry Cross* as a metaphor for social decadence and medical profligacy, as in the case of the "poor flapper" diagnosed with "the disease 'flapperism'" and sent for medical treatment, instead of the AAVS's preferred method: a regimen of spiritual and social uplift to heal the "strain of living in a jazz age."[40]

Popular jazz, then, was white and black, native and foreign, human and animal: popular white bands such as the Original Dixieland Jass Band and the New Orleans Rhythm Kings "did our best to copy the colored music we'd heard at home" while also incorporating influences from Arnold Schoenberg, Igor Stravinsky, Gustav Holst, and Eastwood Lane.[41] This very amalgamation was almost more threatening than black jazz itself as a miscegenation made manifest in music. The Original Dixieland Jass Band was made up of the children of Italian immigrants who had migrated from New Orleans to Chicago. Musicians from Philadelphian immigrant families, such as Joe Venuti and Eddie Lang, né Salvatore Massaro, likewise flouted the goals of the Settlement Music School by taking classical instruments such as the violin and guitar and putting them toward a professional career in popular jazz music.[42] Jazz also carried etymological sexual weight: as the venerable jazz historian Marshall Stearns noted, "'The word "jass," later "jazz," turned up first in Chicago in the middle teens with an unprintable meaning,'" not unlike "other words descriptive of musical styles with origins in Negro slang."[43] Jazz songs often included the sounds of barnyard animals as sonic abbreviations for sex. Music placed under the wide umbrella of jazz was a challenge to white sexuality, even when performed by white entertainers (and perhaps white musicians performing jazz was even more jarring to reformers like the AAVS). The profound "disharmony" of this sexualized and racialized music was all the more disconcerting to the AAVS given its easy availability through the modern technologies of the phonograph and radio.

Philadelphia itself was not a jazz hub like its close neighbors New York—fully in the swing of the Harlem Renaissance during the 1920s—and Atlantic City. Entertainers from Philadelphia, such as the black jazz singer Ethel Waters, Venuti, and Lang, left the city to build their careers.[44] Yet their music gained entrance into middle-class homes through the radio, which had become a common fixture in the mid-1910s. Radio stations played everything from classical music to variety shows, dance music such as the foxtrot, and of course, popular or "jazz" music, in addition to advertisements and educational programs. For readers of the *Starry Cross*, constant vigilance was required in the

presence of the airwaves themselves, emphasizing the need to protect one's body from harmful, controlling messages coming in. The radio's airwaves figured as another form of uncontrollable penetration, characterized as an "invisible ether which bears the waves of jazz and merriment to millions of mechanical receivers" while also "bearing the unheard, but not unregistered, groans and whimperings of thousands of mutilated and disemboweled animals."[45] This statement is arresting, as it suggests that the audible proof of animal torture could literally be vaporized into the air, creating a toxic miasma of "jazz" that could infect unsuspecting people who put themselves at risk by having a good time. Yet these links recur: radio advertisements for the Metropolitan Life Insurance Company, for example, included a segment called "Health Talks." Harry Bradford, contributor to the *Starry Cross*, commented in 1926 that "these were so thoroughly devoted to warning their listeners-in to get vaccinated, and 'protected' against typhoid . . . that we 'hung up' about as speedily as if 'jazz' were coming in, for such performances are the 'jazz' of medicine."[46] Bradford was not advocating against radios (one was in his parlor, and tuned in), or musical entertainment, or medicine itself: rather, he used the term *jazz* to delineate a concrete relationship between vivisection, vaccines, and commercial, or materialist, aims. Jazz stood in for the cries of tortured research subjects, perpetrating the sonic penetration of the "deviltries of the laboratory" into unsuspecting homes, and serving as an analogue to the ether of the vivisector used to dull the senses of a vulnerable living animal in order to torture it. Let me be clear here: jazz, to the AAVS, is both the cloaked noise of animals and a way to turn its unwitting listeners into animals themselves.

To that end, if the "jazz of medicine" referred specifically to the danger of vaccination advertising, the *Starry Cross* extended the metaphor to the suggestion that medical research be performed on humans. Agnes Chase, responding to one Dr. Norbury's proposal to avoid animal vivisection by performing medical experiments on consenting death row inmates instead of "unreliable" animals—with the promise of freedom granted to those who survived—criticized this suggestion as a result of the escalation of vivisectional medicine. After vehemently expressing her belief that vivisectional medicine was illogical because of the anatomical and physiological differences between animals and humans, Chase posited that "the use of condemned criminals for vivisection . . . is evidence of the increasing boldness of the vivisector" who,

> having been permitted almost unrestricted use of animals . . . now feels no hesitancy in demanding adult human material with every reason to believe that ultimately he will be accommodated. Dr. Norbury's idea to inform the individual that, if he would assume the

> risk of "great suffering" and "the likelihood of death" by surrendering himself to vivisection, he would be rewarded by being released again upon society if he survived . . . is the logical outcome of what might be described as "jazz reasoning," and implied that its author either cares for nothing but the indulgence of his own desires at any cost to others, or that he is merely seeking a very vulgar type of publicity.[47]

Dr. Norbury's suggestion to replace animals with humans could be interpreted as an antivivisectionist argument, since it spared animals from experimentation. However, while some antivivisectionists ostensibly supported such reasoning (often offering up the idea that vivisectional doctors and medical students should be research subjects), to Chase and the *Starry Cross*, the "jazz reasoning" of any form of vivisection, human or animal, was an ultimate corruption of the spirit.[48] Substituting humans for animals as research subjects did nothing to address the AAVS's broader fear that materialist research itself was corrupt; instead, it affirmed the corrupting influence of experimentation. Yet calling such reasoning "jazz" passed a racial judgment on this confusion of human and animal bodies. Despite couching its argument in terms of universal mercy and kindness toward animals, the AAVS was unsparingly harsh regarding race, sex, and contamination.

"Jazz medicine," "jazz reasoning," and the "jazz band of vivisection with its saxophones and serums" all link materialist science to the sound of tortured animals and the physical mutilation of animal bodies while pointing to the vulnerability of humans to experimentation. Of course, for the readers of the *Starry Cross*, human vivisection was already happening via compulsory vaccination. The gap in knowledge between laboratory scientists and nonscientists, rapidly widening since Pasteur and the Rockefeller Institute, opened a space for readers' critique of science, materialism, and technology that valued the inviolable body and spoke to a very real anxiety about a loss of control, a disruption of the "harmony" of natural evolution aided by modern penetrative technologies that sullied the purity of the body. None of those values are unreasonable. But linking the threat to human purity posed by the hypodermic needle to the "disharmony" of jazz, and then describing jazz as the carrier of the silent screams of vivisected animals, gives pause.

Recall Logan's characterization of vivisectional laboratory practices as the "offspring of our animal inheritance." In one phrase, he espouses evolution, condemns vivisection, and places humans and animals on an unequal hierarchy of value, the former being a more evolved derivation of the latter. Those who vivisect are closer to animals than humans, on a grand evolutionary scale. Likewise, the AAVS animalized jazz by relating it to vivisection and condemning its

sonic penetration of the parlor as the silent carrier of animals' tortured screams, unequivocally participating in the racial zoologizing of nonwhite people. From this position, the willing participant in vaccination was engaging in a form of miscegenation, both bestially and racially. Vivisectors are animalized; the human victims of vaccinations are animalized; vivisectors contaminate the human spirit; the human victims of vaccination are contaminated: the alignment of this animalization with jazz infused the "merciful" critique of scientific contamination with inescapably racialized speciesism.

Conclusion

Appealing to the sonic dimensions of animal torture in the face of widening acceptance of vaccination reveals the extent to which Philadelphia's antivivisectionists struggled to adjust their rhetoric to social change and keep pace with the "peculiar expression" of the interwar years. In the late nineteenth and very early twentieth century, the plea for universal mercy toward animals could encompass racial progressivism, the individual's capacity to combat disease without the state's aid, and the preservation of human purity both in body and in spirit. But by the mid-1920s the AAVS was wholly unable to reconcile antivivisection activism with these other fundamental tenets, and its attempt to vilify the medical technology of vaccination by enmeshing the protection of animals with the protection of human purity failed. Animal experimentation for human medicine did (and very much does) continue; vaccination, once genuinely dangerous, became safer, standardized, and nationally compulsory.[49] Tying animal activism to antivaccination was in some sense the AAVS's undoing, a "fatal flaw" that had much to do with the public presence of antivivisection activism fading away in the years before World War II. In a world where scientific research was becoming a trusted authority, the "jazz band of saxophones and serums" was a bizarre anachronism, too uncomfortable to maintain. Where the AAVS saw vaccination as a polluter of white bodies, mainstream American families increasingly began to turn to it as a protector of whiteness, a defender of purity against disease and contamination, and a necessary component of American childhood.

Of course, controversies over vaccines have always existed. Recently they have bubbled up in mainstream outlets, bringing the voices of the AAVS into an odd "harmony" with current antivaccination activism. These discourses share a belief that vaccines cause disease (autism being a hotly debated, if scientifically suspect, result of certain vaccines). However, while the superficial basis of both arguments cohere, they diverge on the concept of natural: the

AAVS was adamant that vivisection and the use of animal-produced antibodies were fundamentally unnatural, whereas today's antivaccination activists often point to the *synthetically* produced ingredients in vaccines as pollutants. The perceived tyranny of the chemical reigns, despite its sparing of thousands upon thousands of animal lives that would have been necessary for the ongoing production of vaccines in the contemporary world—a point well beyond the scope of current debates. Laboratory synthetics were developed as way to eliminate the need for animal torture, with its potential attendant spiritual and bodily contaminations (and, frankly, for expediency). Now, synthetics have replaced the animal body not only in vaccine production but also in antivaccine activism. In some sense, they have made the animals both historically and currently involved in vaccine production invisible, exposing the degree to which the AAVS's arguments about animals and vaccines have become irrelevant even in an age where animal protection both inside and outside the laboratory is a visible, public issue.

So what, in the final analysis, were the antivivisectionists protecting? If the answer were simply "animals used for laboratory research," we may imagine that antivivisection activism, despite many contributing factors to this result, might not have collapsed as profoundly as it did from the 1930s to the late 1960s, when it reemerged, secularized, in a very different context and with very different rhetoric. Instead, the vaccination controversy exposed contradictions within the AAVS's arguments that compromised their position, especially in light of visible gains in public health being made with the aid of vaccine technologies by the late 1920s. Critiquing vaccines because of their basis in animal suffering, their impact on the commercialization of health, and their role in the increasing vulnerability of the body to intrusive technologies is a powerful moral argument. However, tying them to sex, race, miscegenation, and bestiality is quite another thing. The racialization and animalization of vaccination proves that for the AAVS, its mission to protect animals and preserve the spiritual and bodily purity threatened by vivisectional research was ineluctably tied to preserving whiteness.

The role that the AAVS played in scientific history was a small, and failed, one. But its contribution is an important tool in understanding what is at stake when we attempt to define the human against the animal or to investigate the permutations of that perceived boundary. The need to turn to race in order to describe the horror of injecting animal serums into the human body, the sanctioning of that activity by science, and the public trust in materialist science as an authority, is a powerful example of how one prejudice (speciesism) can so easily slide into another (racism) even though the core ideology of the

AAVS was quite progressive on both counts. Scholars at the intersection of science, animals, and American culture need to be attuned to the figurative power of the human–animal divide to perhaps reveal too much, or go too far, or compromise the integrity of an argument that seems, on its surface, to be much simpler. Conversations about the scientific treatment of the animal body, even in a specifically benevolent context such as the AAVS, encompass an ethics that necessarily engages both the human and animal corpus. Perhaps we are more compromised than we would like to think.

Notes

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1. Anita Guerrini, *Experimenting with Humans and Animals: From Galen to Animal Rights* (Baltimore, MD: Johns Hopkins University Press, 2003), 112.
2. Robert R. Logan, "A National A. V.," *Starry Cross* 37.10 (1929): 147.
3. Harry B. Bradford, "Blood Pollution Is Outraging Nature!," *Starry Cross* 31.7 (1922): 107.
4. James Colgrove, "'Science in a Democracy': The Contested Status of Vaccination in the Progressive Era and the 1920s," *Isis* 96.2 (2005): 174.
5. Ibid., 174–75.
6. Ibid., 173. Antivaccination campaigns could point to compelling evidence of the danger of vaccines. Colgrove details the widespread and diverse motivation for antivaccination. The success of antivaccination legislation was somewhat regional, occurring especially in the western states.
7. Robert Logan, "Our Subscribers," *Starry Cross* 35.3 (1926): 40.
8. Such as Will Hays, president of the Motion Picture Producers and Distributors of America and famous namesake of the Hays Code of film censorship (Mary Lovell, "Interesting Correspondence: Motion Pictures," *Starry Cross* 36.2 [1927]: 25).
9. Steve Baker, *Picturing the Beast: Animals, Identity, and Representation* (Champaign: University of Illinois Press, 2001), 67.
10. Guerrini, *Experimenting with Humans and Animals*, 55.
11. Ibid., 96. The eye's aqueous humor became a culture medium for anthrax, proving that the organism could be grown outside the body and increasing the ability to isolate and study bacterial organisms.
12. Ibid., 98–99.
13. Ibid., 108. Technically, true vaccines confer lifetime immunity. Antitoxins, such as the diphtheria and tetanus antitoxins, must be boosted throughout one's lifetime. These particular diseases are now covered by what doctors call the "T-DAP" vaccine. The AAVS's fear about the increasing scale of animal involvement in vaccine production was not unfounded: over a million monkeys, and possibly five times that number, were involved in polio research, starting with Flexner's attempts to cure the disease during the 1930s and through the production of the Salk polio vaccine after World War II.
14. Guerrini also speaks at length about Pasteur, Lister, and the use of animals in developing the germ theory at the turn of the twentieth century. The *Starry Cross* folks thought sanitation, in combination with a vegetarian diet and mental cleanliness, was quite enough to prevent the spread of disease.
15. Keen writes specifically of this transformation in *Medical Research and Human Welfare: A Record of Personal Experiences and Observations during a Professional Life of Fifty-Seven Years* (Boston: Houghton Mifflin, 1917).

16. Ibid., 10.
17. Ann Fabian, *The Skull Collectors: Race, Science, and America's Unburied Dead* (Chicago: University of Chicago Press, 2010), 18.
18. Edgar P. Richardson, "The Athens of America: 1800–1825," in *Philadelphia: A 300-Year History*, ed. Russell F. Weigley (New York: Norton, 1982), 241.
19. Ibid., 27.
20. Let us not forget that nineteenth-century Romantic universalism was prominent among those scientizing racial difference. During the antebellum period, naturalists like Morton and the Swiss paleontologist Louis Agassiz found a hospitable climate to promote Romantic theories upholding the "natural" superiority of the Teutonic race. Broadly speaking, where the Enlightenment called for gaining knowledge of the universe by studying its individual components, the Romantics (primarily German intellectuals, among them G. W. F. Hegel and Georg Schilling) favored studying the whole in order to understand its parts. However, the Frenchman August Comte's theory of positivism, published and translated during the 1830s, upheld Enlightenment principles of perception by rejecting introspection in favor of a strict scientific method and empirical interpretation of sensory data, fundamentally undermining the concept of universal truth and secularizing scientific practice. While some early US adopters of positivism, such as John C. Calhoun, used the philosophy to support the continuance of slavery, its tenets did render it possible to destabilize the Romantic philosophies undergirding nineteenth-century scientific racism. Louis Menand provides an analysis of the philosophical debates underpinning nineteenth-century science in *The Metaphysical Club: A Story of Ideas in America* (New York: Farrar, Straus and Giroux, 2001). More information on Helmholtz can be found in Michel Meulders, *Helmholtz: From Enlightenment to Neuroscience*, trans. Laurence Garey (Cambridge, MA: MIT Press, 2010). These debates also play out in Fabian, *Skull Collectors*.
21. Helmholtz and materialism equally influenced artists, such as the Philadelphian Thomas Eakins, who combined the medical and artistic pursuit of anatomical knowledge in his 1875 painting *The Gross Clinic*, depicting the materialist surgeon Samuel D. Gross.
22. "What Vivisection Has Done For Humanity," *Ladies' Home Journal*, April 1910, archive.org.
23. Mary Lovell, "Vaccination in Dogs," *Starry Cross* 35.7 (1926): 100.
24. Ibid., 101.
25. Ibid.
26. "Correspondence between Dr. Keen and Mrs. Lovell," *Starry Cross* 35.10 (1926): 153.
27. Ibid., 154.
28. William Williams Keen, *Animal Experimentation and Medical Progress* (Boston: Houghton Mifflin, 1914), 14, 21.
29. Martha Ramsey and Duane Ramsey, "The Settlement Music School," *Music Supervisors' Journal* 19.5 (May 1933): 34.
30. "The History of Settlement Music School," *Settlement Music School*, www.smsmusic.org/about/history.php?t=1 (accessed January 23, 2013).
31. Ronald Schleifer, *Modernism and Popular Music* (New York: Cambridge University Press, 2011), 26.
32. Ibid., 2–3.
33. Ibid., 3.
34. Louis Erenberg, *Swinging the Dream: Big Band Jazz and the Rebirth of American Culture* (Chicago: University of Chicago Press, 1998), 6. Race and popular music in American history have a venerable literature unto their own. Two recent contributions in American studies on the complex racing of jazz are Joel Dinerstein, *Swinging the Machine: Modernity, Technology, and African American Culture between the World Wars* (Amherst: University of Massachusetts Press, 2003); and Karl Hagstrom Miller, *Segregating Sound: Inventing Folk and Pop Music in the Age of Jim Crow* (Durham, NC: Duke University Press, 2010).
35. Ibid., 7–8.
36. Ibid., 10.
37. While *Starry Cross* published stories and editorials espousing these values in nearly every issue, some particularly clear passages occur in "Animals and Slavery" (June 1920, 84); "Immigration" (July 1922, 99); and "Children of Slavery" (March 1923, 39).
38. Robert Logan, "The Peace Award," *Starry Cross* 33.1 (1924): 4.
39. Mary Lovell, "The Threat of a Prince," *Starry Cross* 36.6 (1927): 100.

40. Mary Lovell, "Spurious Knowledge," *Starry Cross* 32.11 (1922): 165.
41. Arnold Shaw, *The Jazz Age: Popular Music in the 1920s* (New York: Oxford University Press, 1987), 35–37.
42. Lang flouted the goals of the Settlement School even more by occasionally passing as black: "He recorded more than two dozen sides with black blues artists, certainly more than any other white musician of his time. For these interracial recordings—'mixed bands' were uncommon well into the forties—he generally used the pseudonym Blind Willie Dunn" (James Sallis, *The Guitar Players: One Instrument and Its Masters in American Music* [New York: Morrow and Company, 1982], 68).
43. Quoted in Shaw, *Jazz Age*, 17.
44. As a result, there is little scholarly work on Philadelphia's own jazz scene. Biographical information for Lang's and Waters's careers, and the 1920s jazz world, are particularly forthcoming in Shaw, *Jazz Age* and Sallis, *Guitar Players.*
45. Robert Logan, "The Muckrake," *Starry Cross* 35.3 (1926): 36.
46. Harry B. Bradford, "What We Got Over Our Radio," *Starry Cross* 35.3 (1926): 42.
47. Agnes F. Chase, "Heard and Read," *Starry Cross* 37.2 (1929): 24.
48. Keen responds directly to the pro-human-vivisectors with horror in *Animal Experimentation and Medical Progress.*
49. Antivaccination activism is at a high point currently, with parents opting not to vaccinate their children in steadily increasing numbers. While Jenny McCarthy has been the most recent public face of antivaccination (tying it to autism), recent local and national media spar over the issue. See, for example, "AP Analysis: More Parents Are Deciding Not to Get Their Children Vaccinated," *Post Standard* (Syracuse), November 28, 2011; and KJ Dell'Antonia, "Are Your Children at Risk from Vaccine Exemptions?," *New York Times*, November 29, 2011.